he felt the necessity of hearing other teachers, and the reputation of Göttingen soon induced him to select it for the prosecution of his education. He arrived here on the 15th October 1772. He regarded his coming to this university as the greatest good fortune for his scientific career; and he often remarked, that he participated in the saying of Schlözer: *Extra Gottingam vivere non est vivere.*

By his marriage on the 19th October 1778, he became the brother-in-law of Heyne; and, as his father-in-law, George Brandes, and afterwards his brother-in-law, Ernest Brandes, conducted the affairs of the university, we may partly thus account for Blumenbach's influential connection with these matters.

What he did for this seat of learning as a whole, and for our society in particular, is known to the world, and will be recorded in history. His name is permanently inscribed in our Transactions, and his memory will always recall the image of extraordinary and beautiful energy and activity.

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*On Gymnorynchus horridus, a new Cestoid Entozoon.* By John Goodsir, Esq., M.W.S., Conservator of the Museums of the Royal College of Surgeons, Edinburgh. Communicated by the Author. With a Plate.*

The genus Gymnorynchus was instituted by Rudolphi, for the reception of a worm which infests the muscular tissue of the *Brama raji*, and which had been placed by Cuvier in the genus *Scolex*. This worm *Gymnorynchus reptans* (Rudolphi), *Scolex gigas* (Cuvier), is the only species which has been hitherto observed. It is described by Rudolphi, Cuvier, Blainville, and Milne Edwards, and figured by Bremser. The characters of this genus, according to Rudolphi, are:—body depressed, continuous, very long, with a subglobose cervical receptacle; head provided with two bipartite suckers, and emitting four naked retractile proboscides. Bremser, however, represents in his atlas the four proboscides not as naked, but as armed with recurved hooks, an arrangement which can only be recognised when they are fully extended. Milne Edwards, in

* Read before the Wernerian Natural History Society, February 20, 1841.

the last edition of Lamarck's invertebrate animals, has defined the genus thus:—body depressed, continuous, or without articulations, composed of three parts; one median, subglobose, prolonged backwards into a very long tail, and forwards into a wrinkled neck; the cephalic bulging, provided with two bipartite suckers and four papillose tentacula.

When dissecting the sun-fish, which formed the subject of a former communication to the Society, I found in the liver a number of entozoa which presented a very curious appearance. They were cylindrical, very much elongated, coiled and twisted on the surface and in the substance of the organ, one of their extremities subglobose, and situate immediately under the peritoneum, the other tapering to a fine point. They adhered to the parenchyma of the organ by cellular tissue, and occasionally where one coil lay over the other, the two adhered. Their colour was cream-white, so that they contrasted strongly with the deep brown of the liver.

On removing one of them, and making a longitudinal incision, I found that it was not a worm, but an elongated sac or cyst containing a worm, which, when withdrawn, was found to be alive, although the fish had been a week dead. When placed in lukewarm water, it pushed out its head and neck from the cervical receptacle, protruded the four-armed tentacula, and continued in lively motion for some hours. The globose receptacle, with the head and neck of the worm, were lodged in the bulbous extremity of the cyst, but the tail did not extend into the attenuated extremity.

I had no difficulty in referring the worm to the genus Gymnorynchus. I may remark, however, that it presented one character not included in the definition of this genus. It exhibited, when gently compressed between two plates of glass, distant, but distinct articulations. From an examination of Bremser's drawing, and a consideration of the relations of the genus, I strongly suspect that the old species is also articulated, and that such a conformation must be considered as a character of this cestoid genus. My specimens present a character, which appears to be sufficient to distinguish them as a new species. They have a separate circle of large recurved hooks on the tentacula, an arrangement not to be seen in Bremser's figure of *Gymnorynchus reptans.*

The cyst enclosing the worm is double. The outer coat is rough, flocculent, and adherent to the parenchyma of the liver. The anterior extremity is dilated, and in all the specimens was situate immediately under the peritoneum. The posterior extremity, again, was so attenuated that it was traced with great difficulty, as it lay coiled about in all directions through the substance of the organ. Within the outer coat, another cyst is situate closely investing the worm; it is smooth, transparent, thin, and elastic, and does not adhere to the outer. The worm is visible through this second tunic, and lies with its anterior bulbous extremity packed up in the vesicular portion of the cyst. When one of the animals was released from its prison, and placed in water, it dilated its anterior extremity, projected its head and neck, and presented the appearance exhibited in Fig. 6, Plate I. The head and neck, when withdrawn, are lodged in the cervical receptacle. There is no particular muscular arrangement to effect this. The tissue of this, as well as of the rest of the animal, was the primitive granular tissue lately described by Mr Forbes. The four-armed tentacula are retracted by four distinct muscles, all of which consist of granular tissue. The arrangement of this part of the animal corresponds exactly with the same part in the *Bothriocephalus corollatus* as described by Leblond in the Annales des Sciences Naturelles, 1836. The motion of these parts in both animals is similar, and the tissue is identical with that denominated by Leblond "Sarcode," or elementary texture, the granular tissue to which I have already referred.

The body, when gently compressed between two plates of glass, exhibited transparent transverse articulations at distances of one-third to half an inch. The most careful examination, however, revealed no nutritive or generative organs in any of the segments. The dilated cervical receptacle, into which the head is retracted, did not appear to communicate with any arrangement of tubes or cavities in the elongated body.

The most interesting circumstance in the history of this entozoon, is the manner in which it is enclosed in a firm and close cyst. It appears to me that this cyst is not altogether the result of irritation of the surrounding tissues. The outer

coat of the cyst may be of this nature, but it is not so easy to conceive the inner tunic to be due to the same cause. Professor Owen, in his memoir on the *Trichina spiralis*—the entozoon of the human muscles,—holds that the cyst of that animal, although apparently consisting of two tunics, is the result of irritation. Dr Knox, again, considers it to be a part of the animal, although the latter lies free in the cavity. This latter opinion is inadmissible, according to the usual conception of an individual animal. Might we not conceive the cysts to be essential parts of all such entozoa, inasmuch as they are never absent? and may we not suppose them to be parts of the original ovum within which the animal was formed, and in which it passes the term of its existence? Without having any facts to adduce in proof, I hazard this supposition as a hint for future research; and as it is not at variance with any of the known conditions of animal existence, it is worth consideration in a fresh investigation of the subject.

EXPLANATION OF THE FIGURES (PLATE I).

Fig. 4. Entozoon inclosed in both cysts.
Fig. 5. The internal transparent cyst, with the worm seen through it.
Fig. 6. The worm removed from the cyst and fully expanded.
Fig. 7. The cervical receptacle opened to shew the retracted head and neck.
Fig. 8. The four muscles of the proboscides.

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*On the Building Materials of the United States of North America.* By David Stevenson, Esq., Civil Engineer, Edinburgh. Communicated by the Society of Arts for Scotland.

There is, perhaps, nothing connected with the useful arts, which has a greater share in forming the characteristic appearance of a country, than the materials which it produces, and of which its public works are necessarily constructed. I use the word *materials*, in the technical sense in which it is employed by engineers and architects, to denote the several productions of the mineral and vegetable kingdoms which are used in the construction of engineering and architectural works; and we have only to look around us for a moment, to be at once convinced how much these, in their almost endless variety, affect